

## ABSTRACT

Methods for detecting variant genes having a polymorphism associated with reduced metabolism of a substrate selected from the group consisting of a CYP3A4 substrate, a CYP3A5 substrate and a GSTM1 substrate in an individual are disclosed.

5 The methods are genotyping methods to identify specific polymorphisms which have been found to be associated with reduced metabolism of chemotherapeutic agents, such as cyclophosphamide and BCNU. Also disclosed are novel polymorphic nucleic acid molecules useful in the methods of the invention.